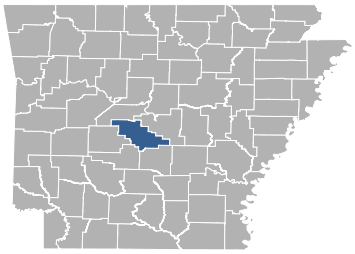
FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1



SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
ALEXANDER, CITY OF	050377
BAUXITE, TOWN OF	050527
BENTON, CITY OF	050192
BRYANT, CITY OF	050308
HASKELL, CITY OF	050416
SALINE COUNTY (UNINCORPORATED AREAS)	050191
SHANNON HILLS, CITY OF	050573
TRASKWOOD, CITY OF	050294

FEMA

PRELIMINARY
03/29/2016

REVISED:

FLOOD INSURANCE STUDY NUMBER
05125CV000B

Version Number 2.3.3.2

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Published Separately

FLOOD INSURANCE STUDY REPORT
SALINE COUNTY, ARKANSAS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60.3, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as "Post-FIRM" buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community's regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Saline County, Arkansas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the 8-digit Hydrologic Unit Codes (HUC-8) sub-basins affecting each, are shown in Table 1. The Flood Insurance Rate Map (FIRM) panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Alexander, City of	050377	11110207	05125C0240E 05125C0250E 05125C0380E	
Bauxite, Town of	050527	08040203	05125C0360E 05125C0370E 05125C0380E 05125C0400E	
Benton, City of	050192	08040203	05125C0225E 05125C0350E 05125C0355E 05125C0360E 05125C0365E 05125C0370E	
Bryant, City of	050308	11110207 08040203	05125C0225E 05125C0240E 05125C0360E 05125C0380E	

Table 1: Listing of NFIP Jurisdictions (Continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Haskell, City of	050416	08040203	05125C0350E 05125C0365E 05125C0475E 05125C0500E	
Saline County (Unincorporated Areas)	050191	11110207 08040203	05125C0050E 05125C0075E 05125C0100E 05125C0125E[1] 05125C0150E 05125C0175E 05125C0200E 05125C0225E 05125C0240E 05125C0250E 05125C0275E[2] 05125C0300E 05125C0325E 05125C0350E 05125C0355E 05125C0360E 05125C0365E 05125C0370E 05125C0380E 05125C0400E 05125C0425E 05125C0450E 05125C0475E 05125C0500E 05125C0525E 05125C0550E[2] 05125C0575E[2]	
Shannon Hills, City of	050573	11110207	05125C0240E 05125C0250E 05125C0380E 05125C0400E	
Traskwood, City of	050294	08040203	05125C0475E	

[1] No Special Flood Hazard Areas Identified

[2] Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Saline County became effective on June 19, 2012. Refer to Table for information about subsequent revisions to the FIRMs.

- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

- FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional

Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional Office for more information about this program.

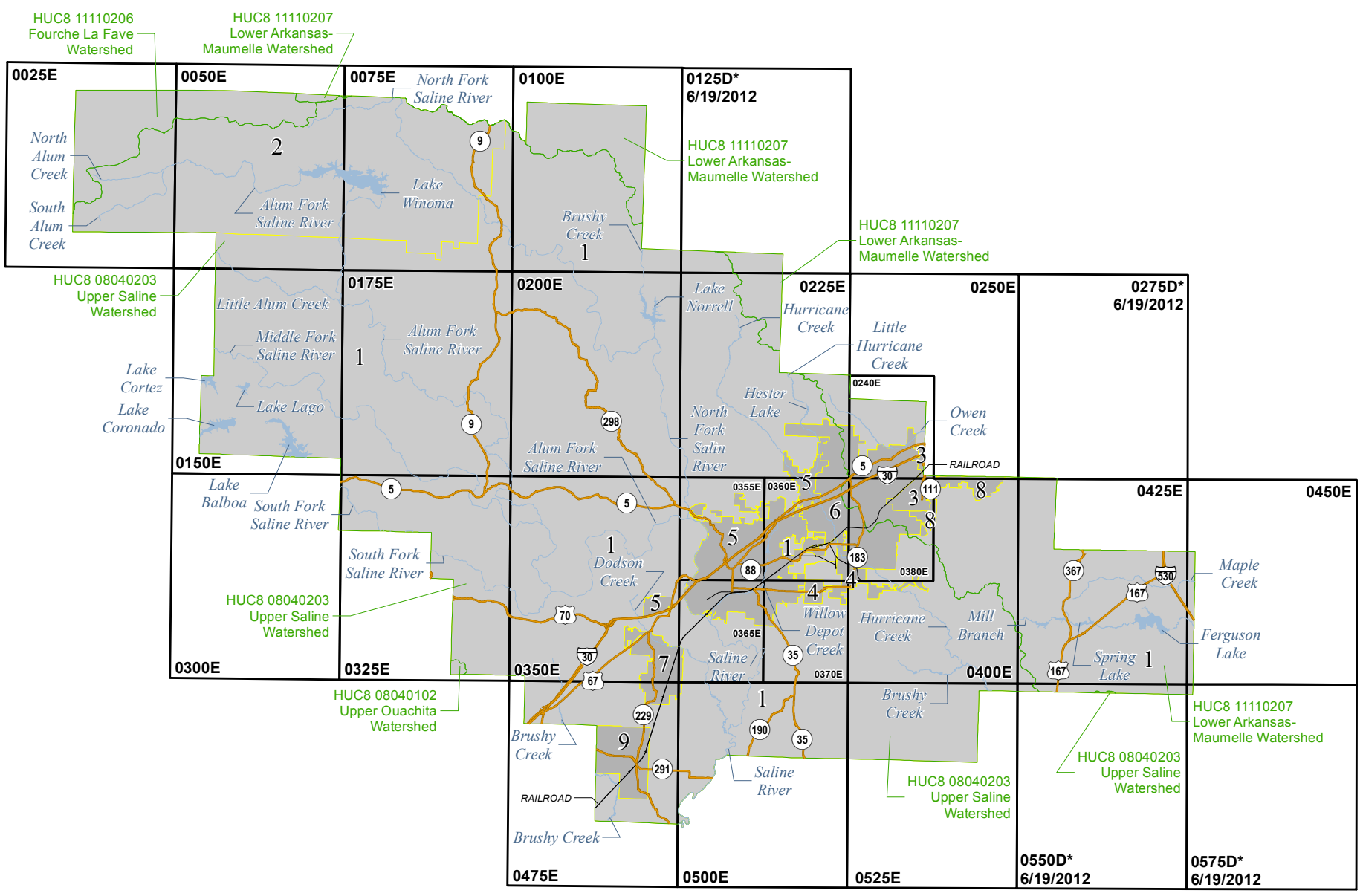
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Saline County and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and United States Geological Survey (USGS) Hydrologic Unit Code – 8 (HUC-8) codes.

Figure 1: FIRM Panel Index



ATTENTION: The corporate limits shown on this FIRM Index was based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before [date].

KEY TO COMMUNITY NAMES & CID		
KEY NUMBER	COMMUNITY NAME	CID
1	SALINE COUNTY, UNINCORPORATED AREAS	050191
2	SALINE COUNTY, UNINCORPORATED AREAS FEDERAL PARK	050191
3	ALEXANDER, CITY OF	050377
4	BAUXITE, TOWN OF	050527
5	BENTON, CITY OF	050192
6	BRYANT, CITY OF	050308
7	HASKELL, CITY OF	050416
8	SHANNON HILLS, CITY OF	050573
9	TRASKWOOD, CITY OF	050294

N

1 inch = 6 miles

0 3 6 12 Miles

Map Projection:
State Plane Arkansas South FIPS 0302
North American Datum of 1983

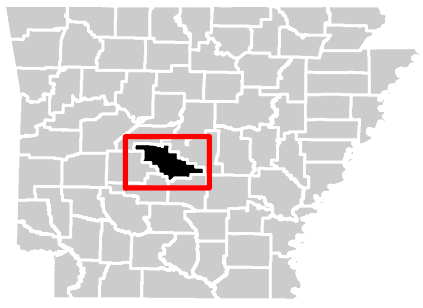
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SEE FIS REPORT FOR ADDITIONAL INFORMATION

* PANEL NOT PRINTED - NO SPECIAL FLOOD HAZARD AREAS

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

SALINE COUNTY, ARKANSAS AND INCORPORATED AREAS

PANELS PRINTED:

0025, 0050, 0075, 0100, 0150, 0175, 0200, 0225, 0240, 0250, 0300, 0325, 0350, 0355, 0360, 0365, 0370, 0380, 0400, 0425, 0450, 0475, 0500, 0525

FEMA

PRELIMINARY
03/29/2016

MAP NUMBER
05125CIND0B

MAP REVISED
DATE

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

Figure 2: Map Legend for FIRM

PROJECTION INFORMATION: The projection used in the preparation of the map was State Plane South FIPS 0302 Feet**.** The horizontal datum was **NAD83, GRS1980 spheroid.** Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the **North American Vertical Datum of 1988.** These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the **North American Vertical Datum of 1988,** visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was derived from U.S. Census Bureau TIGER files, dated 2015, and digital data provided by the Arkansas Geographic Information Office, dated 2015**.** For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Figure 2: Map Legend for FIRM

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within **Saline County, AR**, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Figure 2: Map Legend for FIRM

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Saline County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Figure 2: Map Legend for FIRM

Regulatory Floodway determined in Zone AE.

Non-encroachment zone (see Section 2.4 of this FIS Report for more information)

The Colorado River Floodway was established by Congress in the Colorado River Floodway Protection Act of 1986, Public Law 99-450 (100 Statute 1129). The Act imposes certain restrictions within the Floodway.

FLOOD INSURANCE IS NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER APRIL 8, 1987, IN THE DESIGNATED COLORADO RIVER FLOODWAY

OTHER AREAS OF FLOOD HAZARD

Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.

Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.

Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.

OTHER AREAS

Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

Unshaded Zone X: Areas of minimal flood hazard.

FLOOD HAZARD AND OTHER BOUNDARY LINES

(ortho) (vector)

Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)

Limit of Study

Jurisdiction Boundary

Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet

Figure 2: Map Legend for FIRM

GENERAL STRUCTURES

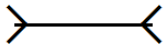
Aqueduct
Channel
Culvert
Storm Sewer

Channel, Culvert, Aqueduct, or Storm Sewer

Dam
Jetty
Weir

Dam, Jetty, Weir

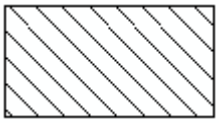
Levee, Dike, or Floodwall



Bridge

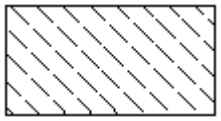
Bridge

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.* ***See Notes to Users for important information.***



CBRS AREA
09/30/2009

Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.



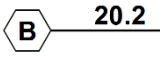
OTHERWISE PROTECTED AREA
09/30/2009

Otherwise Protected Area

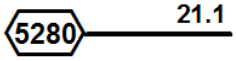
REFERENCE MARKERS

River mile Markers

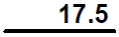
CROSS SECTION & TRANSECT INFORMATION



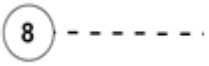
Lettered Cross Section with Regulatory Water Surface Elevation (BFE)



Numbered Cross Section with Regulatory Water Surface Elevation (BFE)

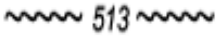


Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)



Coastal Transect

Figure 2: Map Legend for FIRM

	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
	River, Stream or Other Hydrographic Feature
	Interstate Highway
	U.S. Highway
	State Highway
	County Highway
	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16’ 52.5”	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Saline County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3, "Map Legend for FIRM", shows the full legend of all map features and describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Note that not all of these features may appear on the FIRM panels in Saline County. Table and Table indicate the flood zone designations for each flooding source and each community within Saline County, AR, respectively.

Table , "Flooding Sources Included in this FIS Report," lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table . Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Alum Fork Saline River	Saline County	Confluence with North Fork Saline River and Saline River	Approximately 8,460 feet above confluence with North Fork Saline River and Saline River	08040203	1.60		Y	AE	May 17, 1982
Boswell Creek	City of Bryant	Confluence with Hurricane Creek	Approximately 5,080 feet above confluence with Hurricane Creek	08040203	0.96		N	AE	November 13, 2014
Bryant Tributary	City of Bryant	Confluence with Crooked Creek	Approximately 5,148 feet above confluence with Crooked Creek	11110207	0.98		Y	AE	January 19, 1996
Cedar Creek	Saline County	Lake Balboa County Boundary	Lake Coronado County Boundary	08040203	7.93		Y	AE	May 17, 1982
Clear Creek	Saline County	Approximately 8.14 miles above confluence with Pennington Bayou	Approximately 9.27 miles above confluence with Pennington Bayou	11110207	1.13		Y	AE	April 2, 2003
Crooked Creek	City of Bryant City of Alexander	At State Highway 111	Approximately 744 feet upstream of Reynolds Road	11110207	4.67		Y	AE	January 19, 1996
Crooked Creek Tributary	City of Bryant	Confluence with Crooked Creek	Approximately 2,270 feet above confluence with Crooked Creek	11110207	0.43		Y	AE	2003

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Duck Creek	Saline County	Confluence with Clear Creek	Approximately 560 feet upstream of U.S. Highway 167	11110207	2.91		Y	AE	April 2, 2003
Fourche Creek	Saline County	At county boundary	Approximately 164 feet upstream of Colonel Glenn Road	11110207	3.25		Y	AE	May 17, 1982
Hope Branch	Saline County	Confluence with Lorance Creek	Approximately 187 feet upstream of Dena Drive	11110207			N	AE	April 2, 2003
Hurricane Creek	City of Benton City of Bryant Saline County	Approximately 61.3 miles above confluence with Saline River	Approximately 68.1 miles above confluence with Saline River	08040203	6.70		Y	AE	November 13, 2014
Hurricane Creek Tributary 1	City of Benton City of Bryant Saline County	Confluence with Hurricane Creek	Approximately 2.93 miles above confluence with Hurricane Creek	08040203	2.93		N	AE	November 13, 2014
Hurricane Creek Tributary 1A	City of Benton	Confluence with Hurricane Creek Tributary 1	Approximately 265 feet upstream of Bay Meadow Drive	08040203	0.36		N	AE	November 13, 2014
Little Hurricane Creek	City of Benton City of Bryant Saline County	Confluence with Hurricane Creek	Approximately 12,000 feet above confluence with Hurricane Creek	08040203	2.27		Y	AE	November 13, 2014
Lorance and Dry Creeks	Saline County	Approximately 9.0 miles above confluence with Arkansas River	Approximately 20.2 miles above confluence with Arkansas River	11110207	11.2		Y	AE	May 17, 1982

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Maple Creek	Saline County	Approximately 7,000 feet above confluence with Lorance Creek	Approximately 38,000 feet above confluence with Lorance Creek	11110207	5.87		Y	AE	April 2, 2003
Maple Creek Tributary	Saline County	Confluence with Maple Creek	Approximately 4,650 feet above confluence with Maple Creek	11110207	0.88		Y	AE	April 2, 2003
McCright Branch	Saline County	Confluence with Hope Branch	Approximately 8,125 feet above confluence with Hope Branch	11110207	1.53		Y	AE	April 2, 2003
McNeil Branch	City of Benton	Confluence with Saline River	Approximately 9,980 feet above confluence with Saline River	08040203	1.89		Y	AE	June 15, 1981
Middle Fork Saline River	Saline County	Confluence with Saline River	Approximately 7.1 miles above confluence with Saline River	08040203	7.1		Y	AE	May 17, 1982
Mill Creek	Saline County	Confluence with Middle Fork Saline River	Approximately 2.2 miles above confluence with Middle Fork Saline River	08040203	2.2		Y	AE	May 17, 1982
North Fork Saline River	Saline County	Confluence with Alum Fork Saline River	Approximately 1.95 miles above confluence with North Fork Saline River	08040203	1.95		Y	AE	May 17, 1982

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Otter Creek	City of Shannon Hills Saline County	Approximately 4.8 miles above confluence with Fourche Creek	Approximately 7.2 miles above confluence with Fourche Creek	11110207	2.4		Y	AE	August 15, 1989
Otter Creek Tributary	Saline County	Confluence with Otter Creek	Approximately 0.6 miles above confluence with Otter Creek	11110207	0.6		Y	AE	August 15, 1989
Owen Creek	City of Bryant Saline County	At county boundary	Approximately 1,000 feet upstream of Hilldale Road	11110207	4.0		Y	AE	April 2, 2003
Saline River	City of Benton City of Haskell Saline County	At county boundary	At confluence with Alum Fork Saline River and North Fork Saline River	08040203	22.7		Y	AE	May 17, 1982
Salt Creek	City of Benton	Confluence with Saline River	Approximately 2,305 feet upstream of Shenandoah Road	08040203	2.7		Y	AE	1981
Shannon Hills Tributary	City of Shannon Hills	Confluence with Otter Creek	Approximately 1,454 feet upstream of Joan Drive	11110207	0.7		Y	AE	August 15, 1989
Trailer Park Ditch	City of Bryant City of Alexander	Confluence with Crooked Creek	At diversion with Crooked Creek	11110207	0.6		N	AE	January 19, 1996
Trace Creek	City of Haskell Saline County	At the confluence of Unnamed Tributary to Trace Creek 1	Approximately 350 feet upstream of U.S. Highway 67	08040203	3.5		Y	AE	November 1, 2015

Table 2: Flooding Sources Included in this FIS Report (Continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Upper Depot Creek	City of Benton	Confluence with Willow Depot Creek	Approximately 5,330 feet above confluence with Willow Depot Creek	08040203	1.0		N	AE	June 15, 1981
Willow Depot Creek	City of Benton Saline County	Confluence with Saline River	Approximately 815 feet upstream of Gary Drive	08040203	4.7		N	AE	1981
All previously studied streams	Saline County			08040203			Y	AE	March 2009

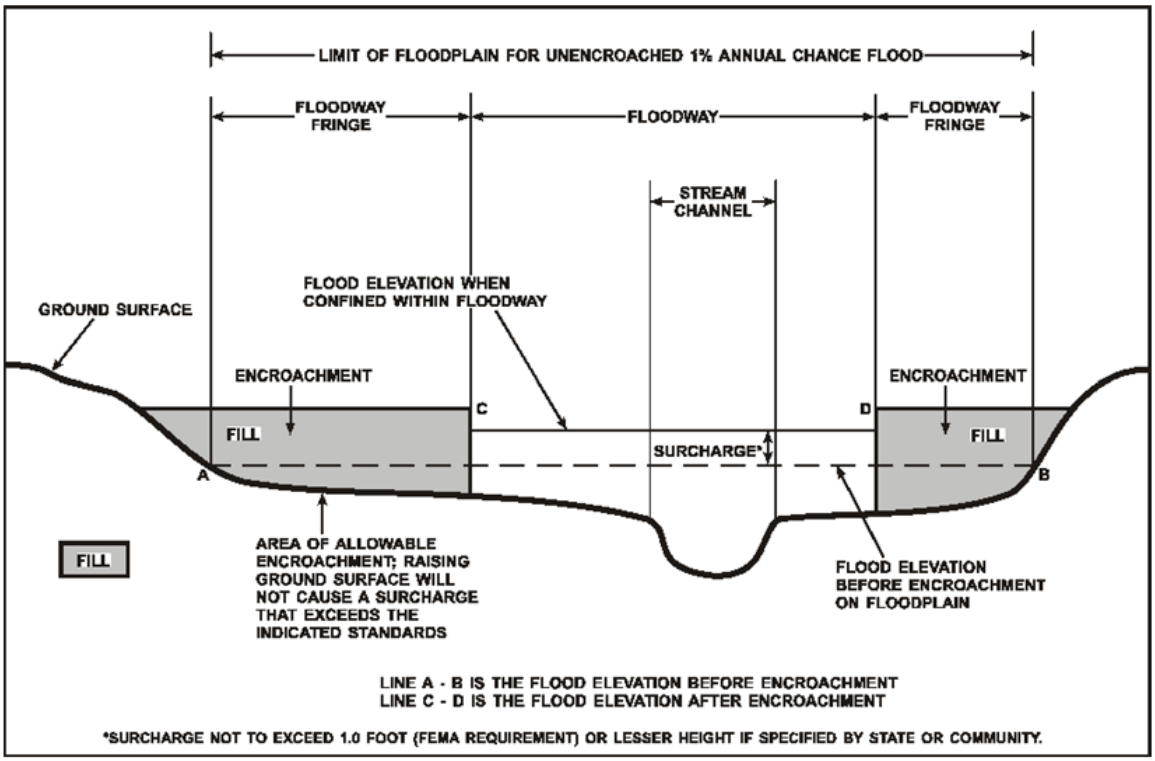
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. Regulations for State require communities in Saline County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table , "Floodway Data."

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and l% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

Some States and communities use non-encroachment zones to manage floodplain development. For flooding sources with medium flood risk, field surveys are often not collected and surveyed bridge and culvert geometry is not developed. Standard hydrologic and hydraulic analyses are still performed to determine BFEs in these areas. However, floodways are not typically determined, since specific channel profiles are not developed. To assist communities with managing floodplain development in these areas, a "non-encroachment zone" may be provided. While not a FEMA designated floodway, the non-encroachment zone represents that area around the stream that should be reserved to convey the 1% annual chance flood event. As with a floodway, all surcharges must fall within the acceptable range in the non-encroachment zone.

General setbacks can be used in areas of lower risk (e.g. unnumbered Zone A), but these are not considered sufficient where unnumbered Zone A is replaced by Zone AE. The NFIP requires communities to ensure that any development in a non-encroachment area causes no increase in BFEs. Communities must generally prohibit development within the area defined by the non-encroachment width to meet the NFIP requirement. Regulations for State require communities in Saline County to limit increases caused by encroachment to 0.5 foot and several communities have adopted additional restrictions for non-encroachment areas.

Non-encroachment determinations may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table , "Flood Hazard and Non-Encroachment Data for Selected Streams." Areas for which non-encroachment zones are provided show BFEs and the 1% annual chance floodplain boundaries mapped as zone AE on the FIRM but no floodways.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to This Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to This Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Saline County.
Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table lists the flood insurance zones within Saline County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Alexander, City of	AE, X
Bauxite, Town of	A, AE, X
Benton, City of	A, AE, X
Bryant, City of	A, AE, X
Haskell, City of	A, AE, X
Saline County Unincorporated Areas	A, AE, X
Shannon Hills, City of	AE, X
Traskwood, City of	A, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information

[Not Applicable to This Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Upper Saline	08040203	Saline River	Extends northwest affecting most of Saline County	1,714.1
Lower Arkansas-Maumelle	11110207	Arkansas River	Extends northwest affecting the northeast edge of Saline County	1,126.1

Table 5: Basin Characteristics (Continued)

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Fourche La Fave	11110206	Fourche La Fave River	Affects only the northwestern corner of Saline County	1,113.9
Upper Ouachita	08040102	Ouachita River	Affects only a small area of the southwestern corner of Saline County	1,751.8

4.2 Principal Flood Problems

Table contains a description of the principal flood problems that have been noted for Saline County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
All sources	
Saline River	Flood event in April of 1927 with a discharge of 110,000 cfs.
Saline River	Flood event in April of 1939 with a discharge of 67,000 cfs.
Saline River	Flood event in April of 1944 with a discharge of 58,000 cfs.
Saline River	Flood event in December of 1953 with a discharge of 49,500 cfs.
Saline River	Flood event in May of 1954 with a discharge of 48,000 cfs.
Saline River	Flood event in May of 1968 with a discharge of 66,000 cfs.
Saline River	Flood event in January of 1969 with a discharge of 100,000 cfs.
Saline River	Flood event in September of 1978 with a discharge of 34,000 cfs.
Saline River	Flood event in December of 1982 with a discharge of 64,700 cfs.
Saline River	Flood event in October of 1984 with a discharge of 52,500 cfs.
Saline River	Flood event in November of 1988 with a discharge of 50,600 cfs.
Saline River	Flood event in March of 1990 with a discharge of 63,600 cfs.
Saline River	Flood event in December of 1993 with a discharge of 42,300 cfs.
Saline River	Flood event in February of 1998 with a discharge of 40,600 cfs.
Saline River	Flood event in September of 2008 with a discharge of 94,800 cfs.
Saline River	Flood event in December of 2009 with a discharge of 77,200 cfs.
Saline River	Flood event in November of 2011 with a discharge of 44,400 cfs.

Table contains information about historic flood elevations in the communities within Saline County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Saline River	Saline County	29.27	2008	N/A	National Weather Service
Saline River	Saline County	29.68	1969	N/A	National Weather Service
Saline River	Saline County	30.50	1927	N/A	National Weather Service

4.3 Non-Levee Flood Protection Measures

Table contains information about non-levee flood protection measures within Saline County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Alum Fork Saline River	N/A	Aqueduct	At confluence of North Fork Saline River and Saline River	
Bryant Tributary	Yvonne Dam	Dam	Approximately 120 feet upstream from Mills Park Road	Maintained by Bloomfield Hills P.O.A.
Cedar Creek	Coronado Dam	Dam	Approximately 2,300 feet upstream of Minorca Road	Maintained by Hot Springs Village Property Owners Association
Hurricane Creek	Hurricane Lake Dam	Dam	Approximately 2,300 feet upstream of State Highway 5	Maintained by Hurricane Lake Estates Development Company
Maple Creek	N/A	Dam	Approximately 1,000 feet downstream of Cole Road	

Table 8: Non-Levee Flood Protection Measures (Continued)

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Willow Depot Creek	N/A	Canal	Approximately 3,000 feet upstream of confluence with Saline River	

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 9 : Levees

[Not Applicable to This Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the "1-percent-plus", or "1%+", annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% "plus"). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table , "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table . Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. The analyses reported herein reflect flooding potentials based on conditions existing in the

community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In the FIS for the City of Benton dated June 15, 1981, peak discharges were determined based on drainage areas and topographic information obtained from topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (FEMA 2012).

Synthetic storms were computed to define the discharge-frequency data for McNeil Creek, and Upper Depot Creeks in Benton. Rainfall distributions for the 10-, 2-, and 1-percent-annual-chance frequencies were computed from rainfall-frequency data contained in the National Weather Service Technical Paper No. 40 (FEMA 2012). Snyder's coefficients were used to compute unit hydrographs for the stream. The hydrographs and rainfall distributions were used to compute synthetic storms of the desired frequencies from which the peak discharges were obtained. A Log-Probability relationship of the lower frequency peak discharges was used to compute each of the 0.2-percent-annual chance peak discharges. Recorded gage data for the Saline River was provided by USACE-SWL. In order to obtain the peak flows for the Saline River, an Annual Series Peak Discharge Frequency Curve was drawn using USACE Southwestern Division (SWD) historically weighted skew factors (FEMA 2012).

Hydrologic data for Salt Creek and Willow Depot Creek for the 10-, 2-, 1-, and 0.2-percent-annual-chance frequency flows, were obtained from the Salt Creek, Saline County, Arkansas, and Willow Depot Creek, Saline County, Arkansas Detailed Project Reports (DPR). The DPRs were provided by USACE Vicksburg District (MVK) (FEMA 2012).

In the FIS for the City of Bryant (FEMA 2012), dated January 19, 1996, the peak discharges were calculated using HEC-1 Flood Hydrograph Package program (FEMA 2012) to determine runoff in each stream studied by detailed methods. Precipitation-depth-frequency information for the city was taken from National Weather Service Publications TP-40 (FEMA 2012), TP-49 (FEMA 2012), and Hydro-35 (FEMA 2012)

In the FIS for the City of Shannon Hills (FEMA 2012), dated August 15, 1989, discharges along Otter Creek and Shannon Hills Tributary were determined using unit hydrographs along with appropriate design storms. The design storms were developed from US Weather Bureau Technical Papers 40 and 49 (FEMA 2012). The 0.2-percent-annual-chance discharges were obtained by extrapolating curves obtained from the 10-, 2-, and 1-percent-annual-chance flood discharges. In the 1989 revision of the studies the US Weather Bureau Technical Paper No. 40 rainfall frequency amounts were applied to the HEC-1 model to compute peak runoff. The peak discharge probability values derived from the runoff computations were adjusted for expected probability assuming a 40-year period of record in accordance with a letter from USACE-SWD (letter SWDED-WR dated March 18, 1982; "Expected Probability Adjustments – Synthetic Frequency Curves"). Depth-area-duration studies were conducted for the Otter Creek watershed to determine the critical storm occurrence, and rainfall depths to produce the synthetic peak discharges were obtained from applying rainfall to the HEC-1 model.

For the original FIS for the unincorporated areas of Saline County (FEMA 2012), dated May 17, 1982, peak flood discharges for the Saline River were obtained from streamflow records at the US Geological Survey gage at Benton dating from July 1938. Discharges on the other streams studied in detail were determined by use of unit hydrographs developed at various locations on those streams along with appropriate design storms. The design storms were developed from the US

Weather Bureau Technical Papers Nos. 40 and 49 (FEMA 2012). The 0.2-percent-annual-chance discharges were obtained by extrapolating the curves obtained from 10-, 2-, and 1-percent-annual-chance flood discharges. Gaged data and high water marks were used as guides in determining the design profiles.

In the first revision of the Saline County Unincorporated Areas FIS, dated January 19, 1996, no new hydrologic determinations were made. The discharges were obtained from the original FIS completed by USACE-SWL. Discharges in the split-flow portion of Crooked Creek and Trailer Park Ditch were determined by assuming coincident peaks and summing rating curves at the split points (FEMA 2012)

In the second revision of the Saline County Unincorporated Areas FIS, dated April 2, 2003, the HEC-1 computer program (FEMA 2012) was used to model the rainfall-runoff process and compute discharge hydrographs at index points along the respective stream reaches. Hypothetical design storms having a triangular, or "balanced," distribution were developed based on depth-duration-frequency data from National Weather Service publications. Rainfall losses due to infiltration were accounted for with the Natural Resources Conservation Service (NRCS) Runoff Curve Number methodology developed by the US Department of Agriculture-NRCS. The Snyder unit hydrograph methodology was utilized to transform the rainfall excess into surface runoff and to generate the discharge hydrographs. Since historical precipitation and streamflow data were unavailable for the respective watersheds and streams analyzed in this study, computed flood flows were assumed to have the same frequency of occurrence as the hypothetical design storm events from which they were generated (FEMA 2012).

The Saline County PMR includes revisions based on detailed and limited detailed studies completed by the Arkansas Natural Resources Commission (ANRC) as a FEMA Cooperating Technical Partner (CTP). The following updates only include data revised as a result of the following projects: Hurricane Creek Watershed study (CTP FY13 Risk MAP study) and the Saline County Restudy (CTP FY14 Risk MAP study).

The hydrologic and hydraulic analyses for portions of Hurricane Creek, Little Hurricane Creek, Boswell Creek, Hurricane Creek Tributary 1, and Hurricane Creek Tributary 1A (CTP FY13 Risk MAP study) were performed by the ANRC for FEMA, under Contract No. EMT-2013-CA-0012, Case No. 13-06-1179S. The work was completed in December 2014.

Additional hydrologic and hydraulic analyses for portions of Trace Creek and the approximate flood zones within Saline County (CTP FY14 Risk MAP study) were performed by the ANRC for FEMA, under Contract No. EMW-2014-CA-0163-S01, Case No. 13-06-1179S. The work was completed in December 2015.

Discharges for all reaches in this study were based on design storms computed using the Hydrologic Engineering Center (HEC) – Hydrologic Modeling System (HMS) computer program (Version 3.5).

The SCS Curve Number method, the SCS Unit Hydrograph method, and the Modified Puls routing method were used to determine the loss-rate, transform rainfall excess into surface runoff, and route the flow through the channel for steady-state simulations. Hydrologic parameters for the models used in this study were obtained from the following sources:

The terrain data used for this study was the 2014 LiDAR topographical data. This terrain data, along with general storm sewer information, survey data, and current aerial photography, were used to generate the sub-basin delineations.

Soil data for this study was obtained from the NRCS SSURGO database for Saline County, dated September 2008.

Rainfall data for this analysis were developed using NOAA HYDRO-35 (for 5min to 60 min intensities), TP-40 (for 0.25 hr to 24 hr intensities), and the published City of Bryant, Storm Water Management Manual dated July 12, 2008.

Discharges for Trace Creek were based on previous hydrologic modeling performed for the City of Haskell as part of an existing project. The study was developed by Flood Plain Services as part of an application for a Letter of Map Revision in 2011. Discharges were based on design storms computed using the Hydrologic Engineering Center (HEC) - Hydrologic Modeling System (HMS) computer program (Version 2.0).

Initial and constant losses, the Snyder's Unit Hydrograph method, and the Lag method were used to determine the loss-rate, transform rainfall excess into surface runoff, and route the flow through the channel for steady state simulations.

Rainfall data for this analysis were developed using NOAA Atlas 14.

Peak discharges for all approximate reaches, except a portion of the Alum Fork Saline River, in this study were computed using the USGS Regional Regression Equations. Arkansas is divided into four hydrologic regions, which are based on drainage boundaries and physiography. Saline County contains portions of hydrologic Regions A, B, and D.

The terrain data used for this study was the 2014 LIDAR topographical data.

For the Alum Fork Saline River, a gage analysis was performed on USGS Gage 07362587. This gage station has a sufficient period of record (25 years) to perform a flow frequency analysis. A station skew coefficient of -0.52 was developed and utilized in a weighted skew calculation using methods described within USGS Bulletin 17B. Applying the USGS regression calculation at the gage location results in a flow of approximately 18,000 cfs, or within 13% of the gage calculated flow. From this analysis, discharges were interpolated downstream to Lake Winona using a simple drainage area-to-flow ratio.

A summary of the discharges is provided in Table . Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table . (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table .) Stream gage information is provided in Table .

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
Bryant Tributary to Crooked Creek	At River Mile 0.05	1.03	*	*	*	2,170	*	*
Cedar Creek	At River Mile 1.87	12.9	7,560	*	9,780	10,690	*	12,800
Clear Creek	Approximately 435 feet upstream of U.S. Highway 167	14.29	6,506	*	10,384	11,999	*	16,5495
	Approximately 425 feet upstream of U.S. Highway 167	4.19	2,163	*	2,974	3,336	*	4,369
Crooked Creek	At River Mile 4.51	3.21	*	*	*	6,100	*	*
	At State Highway 111	*	9,300	*	12,000	13,400	*	19,000
Crooked Creek Tributary	At confluence with Crooked Creek	0.31	*	*	*	770	*	*
Duck Creek	Approximately 150 feet upstream of Spring Lake Road	6.40	4,227	*	6,120	6,907	*	9,094
	Approximately 300 feet downstream of U.S. Highway 167	*	3,762	*	5,116	5,718	*	7,382
Fourche Creek	At River Mile 29.0	12.2	6,400	*	8,900	9,825	*	12,000

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
Hope Branch	At confluence with McCright Branch	3.19	3,552	*	5,071	5,774	*	7,801
	Approximately 200 feet downstream of Honey Suckle Road	4.08	3,486	*	4,991	5,722	*	7,843
Hurricane Creek	At State Highway 183	25.8	8,060	*	10,880	12,220	*	15,200
	Just downstream of Hurricane Dam	24.6	8,523	*	11,557	13,257	*	16,252
	Just upstream of the confluence of Hurricane Dam	17.78	6,573	*	8,862	10,075	*	12,354
	Approximately 8,670 feet upstream of Hurricane Dam	15.44	6,634	*	8,901	9,990	*	12,245
Little Hurricane Creek	At confluence with Hurricane Creek	6.82	2,798	*	3,908	4,415	*	5,544
	Approximately 6,600 feet upstream of the confluence with Hurricane Creek	6.22	3,653	*	4,931	5,538	*	6,823
Lorance and Dry Creeks	At County Road 215 (Arch Street Pike)	25.5	8,400	*	11,000	12,400	*	14,500

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
Maple Creek	Approximately 2,400 feet downstream of Maple Creek Road	5.79	1,908	*	2,531	2,807	*	3,566
	Approximately 200 feet downstream of confluence Maple Creek Tributary	4.53	1,562	*	2,057	2,277	*	2,870
Maple Creek	Approximately 60 feet upstream of Spring Lake Road	0.79	982	*	1,349	1,511	*	1,963
Maple Creek Tributary	Approximately 2,200 feet upstream of limit of study	1.76	695	*	924	1,026	*	1,287
	Approximately 100 feet upstream of U.S. Highway 167	1.37	531	*	688	761	*	951
McCright Branch	Approximately 120 feet upstream of Pear Orchard Driver	1.28	863	*	1,371	1,603	*	2,294
	Approximately 540 feet upstream of Dena Road	0.32	578	*	790	882	*	1,141

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
McNeil Creek	At confluence with Saline River	2.60	2,919	*	3,725	4,113	*	4,700
	At Woodland Drive	1.77	2,135	*	2,730	3,005	*	3,420
	Approximately 240 feet downstream of Interstate 30 Access Road	1.45	1,835	*	2,330	2,575	*	2,925
	At downstream side of Main Street	1.05	1,467	*	1,851	2,038	*	2,300
Middle Fork Saline River	At County Road 189	71.9	19,700	*	25,600	28,550	*	34,700
Mill Creek	At confluence with Alum Fork Saline River	10.7	3,100	*	4,450	5,080	*	6,600
North Fork Saline River	At confluence with Alum Fork Saline River and Saline River	139.2	22,330	*	29,450	33,000	*	40,100
Otter Creek	At County Line	7.9	5,900	*	7,475	8,500	*	11,350
Otter Creek Tributary	At confluence with Otter Creek	1.3	1,420	*	1,7525	1,960	*	2,825

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
Owen Creek	Approximately 1,750 feet downstream of Midland Road	5.72	4,450	*	6,143	7,044	*	9,223
	Approximately 100 feet upstream of Hilldale Road	4.45	4,364	*	5,993	6,789	*	8,915
	Approximately 70 feet upstream of Midland Road	2.62	2,925	*	3,994	4,473	*	5,868
Saline River	Gage at Benton – River Mile 198.5	569.0	64,600	*	93,000	104,500	*	130,100
Salt Creek	At confluence with Saline River	3.50	3,145	*	4,014	4,438	*	5,688
	At State Highway 5	2.69	3,546	*	4,521	4,991	*	5,724
	At Shenandoah Road	1.58	2,326	*	2,961	3,273	*	3,685
Shannon Hills Tributary	At confluence with Otter Creek	1.01	660	*	1,200	1,550	*	2,900
Trace Creek	Railroad	3.67	1,840	2,190	2,510	2,810	3,650	3,490
	State Highway 229	3.15	1,780	2,120	2,420	2,700	3,470	3,300
	US Highway 67	2.06	1,630	1,900	2,130	2,340	3,070	2,860
Trailer Park Ditch	At River Mile 0.18	*	*	*	*	1,200	*	*
Upper Depot Creek	At confluence with Willow Depot Creek	1.54	1,703	*	2,179	2,399	*	2,700

Table 10: Summary of Discharges (Continued)

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Plus Annual Chance	0.2% Annual Chance
Willow Depot Creek	At confluence with Saline River	8.93	4,995	*	5,986	6,474	*	9,017
Willow Depot Creek	At Cross-Section V – Missouri Pacific Railroad	7.09	5,435	*	6,943	7,718	*	10,490
	At Edison Avenue	5.78	5,250	*	6,752	7,455	*	9,537
	At Cross-Section AH – Missouri Pacific Railroad	2.86	2,589	*	3,351	3,721	*	4,754

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

[Not Applicable to This Flood Risk Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

Flooding Source	Location	Elevations (feet NAVD88)				
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Ferguson Lake	Saline County	246.7	247.8	248.5	249.2	250.6
Lake Balboa	Saline County	536.9	537.6	538.1	538.6	539.3
Lake Coronado	Saline County	645.5	646.9	647.3	647.6	648.5
Lake Cortez	Saline County	633.0	633.8	634.6	635.3	637.3
Lake Norrell	Saline County	422.4	423.2	423.9	424.5	426.3
Lake Winona	Saline County	742.8	743.6	744.2	744.9	746.6

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Alum Fork Saline River	07362587	USGS	Alum Fork Saline River near Reform, AR	27	1990	2014
Alum Fork Saline River	07363000	USGS	Saline River at Benton, AR	550	1938	1981

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles

are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For the City of Benton FIS, dated June 15, 1981, water surface profiles were computed through use of the USACE HEC-2 step-backwater computer program (FEMA 2012). Starting water surface elevations for the various creeks were determined by computing rating curves for the channel cross-sections at the lower limits of each study. Starting elevations were picked from these curves for the 10-, 2-, 1-, and 0.2-percent annual chance peak discharges. Starting water surface elevations for the Saline River were taken from rating curves at the gage on the river. These gage data were provided by USACE-SWL. The computed profiles were checked for reasonableness by comparing them with existing high-water marks and profiles published in the Benton Flood Plain Information Report (FEMA 2012).

Water surface profiles for Salt Creek and Willow Depot Creek were obtained from the Salt Creek, Saline County, Arkansas, DPR and the Willow Depot Creek, Saline County, Arkansas, DPR, respectively. These reports were provided by USACE-MVK for use in studies for the City of Benton FIS (FEMA 2012).

Below-water sections of channels, bridges, and culverts were surveyed to obtain elevation data and structural geometry. Additional topographic information and overbank elevations on cross-sections were provided by aerial surveys. USACE-SWL and USACE-MVK provided some additional cross-section data for use on the Saline River.

Channel roughness factors (Manning's "n") used in the studies for the City of Benton FIS were chosen by engineering judgment and based on field observations of the streams and flood plain areas. McNeil Creek and Upper Depot Creek have a main channel roughness value of 0.05, with floodplain roughness values ranging from 0.09 to 0.11. The reach of the Saline River adjacent to Benton has main channel roughness values ranging from a high of 0.055 for the 10-percent-annual-chance peak discharge to a low of about 0.040 for the 0.2-percent-annual-chance peak discharge. Floodplain roughness values for the Saline River range from 0.08 to 0.10.

For the City of Bryant FIS water surface elevations for the selected peak discharges were computed using the USACE HEC-2 step-backwater computer program (FEMA 2012). The starting water surface elevation for Crooked Creek was taken from the FIS for Saline County (FEMA 2012). The Bryant Tributary and Crooked Creek Tributary starting water surface elevations were determined assuming coincident peak discharges. Cross-sections for the backwater analyses were field-surveyed. Bridge data were obtained by field surveys and measurements. Channel roughness factors (Manning's "n") used in the hydraulic computations were obtained by engineering judgment, along with field investigation of the streams and floodplain areas. Channel "n" values for Crooked Creek ranged from 0.020 to 0.055; for Crooked Creek Tributary, channel "n" values ranged from 0.045 to 0.055; and for Bryant Tributary, channel "n" values ranged from 0.018 to 0.060. Overbank "n" values ranged from 0.060 to 0.100 for all three streams.

For the City of Shannon Hills FIS dated August 15, 1989, water surface elevations were computed for Otter Creek and Shannon Hills Tributary using the USACE HEC-2 step backwater computer program (FEMA 2012). Starting water surface elevations were determined by normal depth calculations. Channel roughness factors (Manning's "n") used in the analyses were estimated from conditions along the channel and overbank sections. The channel "n" values for both streams ranged from 0.025 to 0.050, and the overbank "n" values ranged from 0.050 to 0.150.

In the original FIS for the unincorporated areas of Saline County, dated May 17, 1982, cross-sections for streams studied in detail were obtained from field surveys or from surveys previously made for other studies in the county. The Manning's roughness coefficients ("n" values) in the study were estimated from conditions along the channel and overbank sections and range from 0.03 to 0.06 for the channel sections and from 0.06 to 0.15 for the overbank sections. Water surface profiles were computed using the USACE HEC-2 Water Surface Profiles Program (FEMA 2012).

Hydraulic analyses for the first revision of the FIS for the unincorporated areas of Saline County, dated January 19, 1996, consisted of developing the 1-percent-annual-chance water surface profiles for studied streams using the USACE HEC-2 Water Surface Profiles computer program (FEMA 2012). Surveyed cross-sections, with vertical control, and detailed bridge descriptions were obtained for use in the HEC-2 model. Manning's "n" values for overbanks used in the model of existing conditions were 0.075. Channel "n" values ranged from 0.045 to 0.055. The starting water surface elevation for Crooked Creek was taken from the Saline County, Arkansas, study of Crooked Creek. The split flow of Trailer Park Ditch was assumed to occur coincidentally with the Crooked Creek peak discharge.

For the second revision of the FIS for the unincorporated areas of Saline County, dated April 2, 2003, the USACE HEC-RAS computer program (FEMA 2012) was used to compute existing conditions water surface profiles for the 10-, 2-, 1-, and 0.2-percent-annual-chance peak discharges for each of the study reaches. Following development of the existing conditions hydraulic models, the limits of the floodway were defined for the 1-percent-annual-chance peak discharge based on a maximum allowable surcharge of 1.0 foot in the water surface elevation. The surveyed cross-sections, surveyed bridge sections, and bridge descriptions with sketches were obtained during the months of January 1998 through March 1998.

This current PMR uses the USACE HEC-RAS modeling software, version 4.1.0, to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, and 0.2%-annual-chance peak discharges for each of the study reaches. Following development of the existing conditions hydraulic models for Hurricane Creek and Little Hurricane Creek, the limits of the floodway were defined for the 1-percent-annual-chance peak discharge based on a maximum allowable surcharge of 1.0 foot in the water surface elevation.

Cross section geometry for the study area was developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey. Survey data of the river channel and bridges along with bridge descriptions, including sketches, were obtained during the period from October 2013 to February 2014.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

Water surface profiles (Exhibit 1) were generated using RASPLOT. Where available, profiles were plotted at a scale similar to the previous FIS profiles. Where previous FIS profiles were not available, profiles were plotted at a scale similar to other streams of equivalent length and discharge.

The USACE HEC-RAS modeling software, version 4.1.0, was used to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, 1%-Plus, and 0.2%-annual-chance peak discharges for the study reach. Trace Creek, near the City of Haskell, incorporates a previous Letter of Map Revision (LOMR), dated October 2011. The analysis for this LOMR was

performed by Flood Plain Services, and includes a steady state HEC-RAS model. This model was used as the base model for the expanded hydraulic analysis. The study extent of the 2011 LOMR extended from the confluence of an unnamed tributary of Trace Creek up to approximately 2,000 feet upstream of State Highway 229. The final hydraulic model developed as part of the Arkansas Cooperating Technical Partner (CTP) study was extended beyond that of the original LOMR up to US Highway 67. The AR CTP extension was modeled as a Limited-Detail Zone AE study, while the original extent was modeled as a Detailed Zone AE study, including floodway. The floodway for Trace Creek was initially set up using the equal conveyance reduction method. Adjustments were made to encroachments' stationing using engineering judgment to ensure spatially smooth transitions while allowing a maximum surcharge of 1.0 ft.

The LOMR model was also supplemented with more recent 1-meter LiDAR data. Updates to the streamline, cross section stationing, and overbank geometry were made in order to incorporate the newer LiDAR data

Cross section geometry for the entire model was updated and/or developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey.

Survey data within the Detailed study reach included existing detailed survey, which were used as is. Survey data for the Limited-Detail study reach of the river channel and bridges along with bridge descriptions, including sketches, were obtained from October 2013 to February 2014.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

Water surface profiles were generated using RASPLOT. Where available, profiles were plotted at a scale similar to the previous FIS profiles. Where previous FIS profiles were not available, profiles were plotted at a scale similar to other streams of equivalent length and discharge.

For all the approximate study reaches, the USACE HEC-RAS modeling software, version 4.1.0, was used to compute steady state existing conditions water surface profiles for the 10%, 4%, 2%, 1%, 1%-Plus, and 0.2%-annual-chance peak discharges for each of the study reaches.

For the approximate study streams, cross section geometry for the study area was developed using LiDAR data collected in January 2014 by Northrop Grumman for the U.S. Geological Survey. Survey data and hydraulic structure information was not included in the modeling per regulatory standards.

For the large reservoirs located within Saline County, information was provided by the Dam Safety & Floodplain Management office of the ANRC. Elevations provided by ANRC were listed in National Geodetic Vertical Datum of 1929 (NGVD29). To convert elevations to the North American Vertical Datum of (NAVD88), a county-wide conversion factor of -0.1 feet was calculated using FEMA guidance. Watershed delineations were completed using Arkansas StreamStats, including the slope used for computing time of concentration. Additional runoff parameters were generated using publicly available data to develop HEC-HMS models to calculate the water surface elevations for each storm event.

Manning's "n" values were chosen by engineering judgment and based on field observations and aerial photography of the streams and floodplain areas.

All other previous effective study reaches were redelineated on the 2014 LiDAR topographic data.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table , "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table . Roughness coefficients are provided in Table. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Alum Fork Saline River	Confluence with North Fork Saline River and Saline River	Approximately 8,460 feet above confluence with North Fork Saline River and Saline River	Gage Analysis	HEC-2	May 17, 1982	AE	
Boswell Creek	Confluence with Hurricane Creek	Approximately 1.0 miles to just upstream of North Richardson Place	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 13, 2014	AE	Limited Detailed Studied Stream
Bryant Tributary	Confluence with Crooked Creek	Approximately 5,148 feet above confluence with Crooked Creek	HEC-1	HEC-2	January 19, 1996	AE	
Cedar Creek	Lake Balboa County Boundary	Lake Coronado County Boundary	HEC-1	HEC-2	May 17, 1982	AE	
Clear Creek	Approximately 8.14 miles above confluence with Pennington Bayou	Approximately 9.27 miles above confluence with Pennington Bayou	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
Crooked Creek	At State Highway 111	Approximately 744 feet upstream of Reynolds Road	HEC-1	HEC-2	January 19, 1996	AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Crooked Creek Tributary	Confluence with Crooked Creek	Approximately 2,270 feet above confluence with Crooked Creek	HEC-1	HEC-2	January 19, 1996	AE	
Duck Creek	Confluence with Clear Creek	Approximately 560 feet upstream of U.S. Highway 167	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
Fourche Creek	At county boundary	Approximately 164 feet upstream of Colonel Glenn Road	HEC-1	HEC-2	May 17, 1982	AE	
Hope Branch	Confluence with Lorance Creek	Approximately 187 feet upstream of Dena Drive	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
Hurricane Creek	Approximately 61.3 miles above confluence with Saline River	Approximately 68.1 miles above confluence with Saline River	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 13, 2014	AE	
Hurricane Creek Tributary 1	Confluence with Hurricane Creek	Approximately 2.9 miles to just downstream of Winchester Road	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 13, 2014	AE	Limited Detailed Studied Stream
Hurricane Creek Tributary 1A	Confluence with Hurricane Creek Tributary 1	Approximately 265 feet upstream of Bay Meadow Drive	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 13, 2014	AE	Limited Detailed Studied Stream

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Hurricane Creek	Confluence with Hurricane Creek	Approximately 12,000 feet above confluence with Hurricane Creek	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 13, 2014	AE	
Lorance and Dry Creeks	Approximately 9.0 miles above confluence with Arkansas River	Approximately 20.2 miles above confluence with Arkansas River	HEC-1	HEC-2	May 17, 1982	AE	
Maple Creek	Approximately 7,000 feet above confluence with Lorance Creek	Approximately 38,000 feet above confluence with Lorance Creek	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
Maple Creek Tributary	Confluence with Maple Creek	Approximately 4,650 feet above confluence with Maple Creek	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
McCright Branch	Confluence with Hope Branch	Approximately 8,125 feet above confluence with Hope Branch	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	
McNeil Branch	Confluence with Saline River	Approximately 9,980 feet above confluence with Saline River	Snyder's Synthetic Hydrographs	HEC-2	June 15, 1981	AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Middle Fork Saline River	Confluence with Saline River	Approximately 7.1 miles above confluence with Saline River	HEC-1	HEC-2	May 17, 1982	AE	
Mill Creek	Confluence with Middle Fork Saline River	Approximately 2.2 miles above confluence with Middle Fork Saline River	HEC-1	HEC-2	May 17, 1982	AE	
North Fork Saline River	Confluence with Alum Fork Saline River	Approximately 1.95 miles above confluence with North Fork Saline River	HEC-1	HEC-2	May 17, 1982	AE	
Otter Creek	Approximately 4.8 miles above confluence with Fourche Creek	Approximately 7.2 miles above confluence with Fourche Creek	HEC-1	HEC-2	August 15, 1989	AE	
Otter Creek Tributary	Confluence with Otter Creek	Approximately 0.6 miles above confluence with Otter Creek	HEC-1	HEC-2	August 15, 1989	AE	
Owen Creek	At county boundary	Approximately 1,000 feet upstream of Hilldale Road	HEC-1	HEC-RAS version 2.2	April 2, 2003	AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Saline River	At county boundary	At confluence with Alum Fork Saline River and North Fork Saline River	Gage Analysis	HEC-2	May 17, 1982	AE	
Salt Creek	Confluence with Saline River	Approximately 2,305 feet upstream of Shenandoah Road	USACE Detailed Project Report	USACE Detailed Project Report	June 15, 1981	AE	
Shannon Hills Tributary	Confluence with Otter Creek	Approximately 1,454 feet upstream of Joan Drive	HEC-1	HEC-2	August 15, 1989	AE	
Trailer Park Ditch	Confluence with Crooked Creek	At diversion with Crooked Creek	HEC-1	HEC-2	January 19, 1996	AE	
Trace Creek	Confluence with Willow Depot Creek	Approximately 5,330 feet above confluence with Willow Depot Creek	HEC-HMS Version 3.5	HEC-RAS Version 4.1	November 1, 2015	AE	
Upper Depot Creek	Confluence with Saline River	Approximately 815 feet upstream of Gary Drive	Snyder's Synthetic Hydrographs	HEC-2	June 15, 1981	AE	
Willow Depot Creek	Confluence with Saline River	Approximately 815 feet upstream of Gary Drive	USACE Detailed Project Report	USACE Detailed Project Report	June 15, 1981	AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Zone A Studies	Varies	Varies	USGS Regression Equations	HEC-RAS Version 4.1	November 1, 2015	A	

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Bryant Tributary	0.018 – 0.060	0.060 – 0.100
Boswell Creek	0.030 – 0.040	0.011 – 0.100
Cedar Creek	0.030 – 0.060	0.060 – 0.150
Clear Creek	0.040 – 0.060	0.100 – 0.110
Crooked Creek	0.020 – 0.055	0.060 – 0.100
Crooked Creek Tributary	0.045 – 0.055	0.018 – 0.060
Duck Creek	0.035 – 0.060	0.050 – 0.110
Fourche Creek	0.030 – 0.060	0.060 – 0.150
Hope Branch	0.040 – 0.045	0.100 – 0.120
Hurricane Creek	0.025 – 0.045	0.011 – 0.10
Hurricane Creek Tributary 1	0.035 – 0.050	0.011 – 0.10
Hurricane Creek Tributary 1A	0.040 – 0.045	0.045 – 0.08
Little Hurricane Creek	0.025 – 0.045	0.011 – 0.100
Lorance and Dry Creeks	0.030 – 0.060	0.060 - .0150
Maple Creek	0.025 – 0.060	0.040 – 0.110
Maple Creek Tributary	0.040 – 0.050	0.100 – 0.110
McCright Branch	0.0415 – 0.050	0.080 – 0.120
McNeil Creek	0.050	0.090 – 0.110
Middle Fork Saline River	0.030 – 0.060	0.060 – 0.150
Mill Creek	0.030 – 0.060	0.060 – 0.150
North Fork Saline River	0.030 – 0.060	0.060 – 0.150
Otter Creek	0.025 - 0.050	0.050 – 0.150
Otter Creek Tributary	0.030 – 0.060	0.060 – 0.150
Owen Creek	0.040 – 0.050	0.070 – 0.130
Saline River	0.040 – 0.055	0.080 – 0.100
Salt Creek	0.030 – 0.060	0.060 – 0.150
Shannon Hills Tributary	0.025 – 0.050	0.050 – 0.150
Trailer Park Ditch	0.030 – 0.060	0.060 – 0.150
Trace Creek	0.045 – 0.050	0.040 – 0.120
Upper Depot Creek	0.050	0.090 – 0.110
Willow Depot Creek	0.030 – 0.060	0.060 – 0.150

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Zone A Studies	0.030 – 0.060	0.050 – 0.120

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project

Table 15: Summary of Coastal Analyses

[Not applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not applicable to this Flood Risk Project]

Table 16: Tide Gage Analysis Specifics

[Not applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project

Table 17: Coastal Transect Parameters

[Not applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project

Table 18: Summary of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov , or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Saline County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion

Quadrangle Name	Quadrangle Corner	Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
Nimrod	SE	34.875	-93.000	0.04
Aplin	SE	34.875	-92.875	0.00
Thornburg	SE	34.875	-92.750	-0.06
Martindale	SE	34.875	-92.625	-0.10
Nimrod SE	SE	34.750	-93.000	0.02
Paron SW	SE	34.750	-92.875	-0.01
Paron	SE	34.750	-92.750	-0.06
Fourche SW	SE	34.750	-92.625	-0.06
Jessieville	SE	34.625	-93.000	0.02
Goosepond Mountain	SE	34.625	-92.875	-0.02
Lonsdale NE	SE	34.625	-92.750	-0.05
Lake Norrell	SE	34.625	-92.625	-0.08
Congo	SE	34.625	-92.500	-0.11
Alexander	SE	34.625	-92.375	-0.15
Lonsdale	SE	34.500	-92.750	-0.04
Haskell	SE	34.500	-92.625	-0.07
Benton	SE	34.500	-92.500	-0.11
Bryant	SE	34.500	-92.375	-0.16
Spring Lake	SE	34.500	-92.250	-0.20
Average Conversion from NGVD29 to NAVD88 = -0.1 feet				

Table 21: Stream-Based Vertical Datum Conversion

[Not applicable to this flood risk project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its

contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table .

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Political boundaries	AGIO	2015	1:12,000	Municipal and county boundaries
Transportation Features	AGIO, Census Bureau (TIGER Files)	2015	1:12,000	Road, airports, and railroads
Surface Water Features	USGS NHD	2006	1:12,000	Streams, rivers, and lakes were derived from NHD data
Public Land Survey System (PLSS)	NFHL	2015	1:24,000	PLSS Township, Range, and Area information

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table .

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 23 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table , "Floodway Data."

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table . All topographic data used for modeling or mapping has been converted as necessary to NAVD88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-

encroachment widths, if calculated, are shown in Table , "Flood Hazard and Non-Encroachment Data for Selected Streams."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data					
		Description	Scale	Contour Interval	$RMSE_z$	$Accuracy_z$	Citation
Saline County	All within Saline County	Light Detection and Ranging data (LiDAR)	4800	2 FT	12.5 cm	24.5 cm	USGS 2014

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	5,280	1,950	22,701	3.7	302.1	302.1	303.1	1.0

[1]Feet above confluence with Saline River and North Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: ALUM FORK SALINE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,112	65	405	5.4	360.5	360.5	361.1	0.6
B	3,168	70	255	1.6	367.7	367.7	368.6	0.9
C	5,122	224	136	1.3	392.1	392.1	392.9	0.8

[1]Feet above confluence with Crooked Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BRYANT TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	25,555	250	1,871	4.1	550.4	550.4	551.0	0.6
B	31,416	160	650	8.8	578.3	578.3	579.3	1.0

[1]Feet above confluence with South Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CEDAR CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	46,772	257	2,627	1.3	257.0	257.0	258.0	1.0
B	47,743	258	1,435	2.3	257.3	257.3	258.2	0.9
C	48,780	270	2,829	1.0	269.9	269.9	269.9	0.0

[1]Feet above Confluence of Pennington Bayou

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CLEAR CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	15,576	1,135	8,213	1.3	320.1	320.1	320.9	0.8
B	20,064	640	3,371	1.9	327.6	327.6	328.2	0.6
C	27,456	400	3,805	1.4	351.4	351.4	352.3	0.9
D	30,096	150	918	3.7	353.6	353.6	354.4	0.8
E	31,680	150	604	4.3	357.6	357.6	357.9	0.3
F	36,590	50	149	4	392.7	392.7	393.5	0.8

[1]Feet above confluence with Fourche Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CROOKED CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	158	57	182	4.2	373.4	373.4	374.3	0.9
B	2,270	63	177	3.1	397.2	397.2	398.2	1.0

[1]Feet above confluence with Crooked Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CROOKED CREEK TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,346	440	3,070	3.0	258.5	258.5	259.0	0.5
B	4,324	575	4,041	2.2	259.9	259.9	260.6	0.7
C	7,876	575	4,383	1.4	264.8	264.8	265.3	0.5
D	12,164	635	3,010	2.0	267.7	267.7	268.7	1.0

[1]Feet above Confluence of Clear Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: DUCK CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	22.54	645	2,968	4.1	320.8	320.8	321.6	0.8
B	23.00	975	5,257	2.3	325.9	325.9	326.8	0.9
C	23.35	850	5,044	2.4	332.0	332.0	333.0	1.0
D	23.70	925	5,162	2.3	336.2	336.2	337.1	0.9
E	24.21	745/31[2]	4,693	2.6	342.5	342.5	343.4	0.9
F	31.86	520	1,753	2.5	489.1	489.1	489.1	0.0
G	32.45	200	1,052	2.5	506.4	506.4	507.0	0.6
H	33.10	100	415	6.3	531.9	531.9	532.1	0.2

[1]Miles above confluence with Arkansas River
[2]Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FOURCHE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,400	245	1,832	3.2	277.0	277.0	277.8	0.8
B	4,720	270	2,341	2.5	279.4	279.4	280.3	0.9

[1]Feet above Confluence of Lorance Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: HOPE BRANCH

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	11.34	635/390[3]	7,109	1.5	247.9	247.9	248.7	0.8
B[2]	12.38	1,045	9,317	1.1	252.9	252.9	253.9	1.0
C[2]	13.32	440	3,754	3.3	254.5	254.5	255.5	1.0
D	15.58	540	5,085	2.4	266.6	266.6	267.5	0.9
E	16.00	1500/35[3]	9,079	1.4	268.1	268.1	269.0	0.9
F	17.49	650	5,172	1.2	277.8	277.8	278.7	0.9
G	18.22	700	4,294	1.5	283.0	283.0	283.2	0.2
H	19.24	800	4,001	1.4	288.5	288.5	289.4	0.9

[1]Miles above confluence with Arkansas River
[2]Cross Section located outside of unincorporated area of Saline County
[3]Total floodway width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LORANCE AND DRY CREEKS

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	13,786	330	1,407	1.5	239.7	239.7	240.6	0.9
B	16,585	400	2,537	1.1	242.6	242.6	242.9	0.3
C	20,026	385	1,969	1.2	244.9	244.9	245.4	0.5
D	24,300	658	2,611	0.8	251.2	251.2	251.3	0.1
E	28,246	142	719	3.1	258.1	258.1	258.9	0.8
F	31,850	200	748	3.0	267.0	267.0	267.0	0.0
G	34,625	230	873	1.7	274.6	274.6	275.3	0.7

[1]Feet above Confluence of Lorance Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MAPLE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,219	72	299	3.4	248.7	248.7	249.6	0.9
B	3,453	287	894	0.9	250.3	250.3	251.3	1.0

[1]Feet above Confluence of Maple Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MAPLE CREEK TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,750	200	919	1.3	290.1	290.1	291.0	0.9
B	5,790	160	806	1.5	301.3	301.3	302.3	1.0

[1]Feet above Confluence of Hope Branch

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MCCRIGHT BRANCH

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	620	100	546	7.3	291.4	281.6[2]	282.3	0.9
B	2,320	149	451	6.7	297.5	297.5	297.5	0
C	2,420	125	429	7.0	300.0	300	300.0	0
D	4,030	89	275	10.9	323.2	323.2	323.2	0
E	4,730	100	399	7.5	329.2	329.2	329.4	0.2
F	6,820	80	213	12.1	350.5	350.5	350.5	0
G	7,050	71	284	9.1	353.6	353.6	354.3	0.7
H	7,370	80	300	8.6	358.4	358.4	358.5	0.1
I	7,530	57	366	7.0	362.5	362.5	362.5	0
J	7,730	75	402	6.4	363.6	363.6	363.6	0
K	8,730	55	322	6.3	372.6	372.6	372.6	0
L	8,880	32	156	13.0	373.9	373.9	373.6	-0.3
M	9,980	190	706	2.9	386.4	386.4	386.4	0

[1]Feet above Confluence of Saline River

[2]Computed without backwater

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MCNEIL CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	16.21	900	6,632	4.3	470.1	470.1	470.8	0.7
B	17.37	1,200	12,172	2.3	481.5	481.5	482.3	0.8
C	18.43	950	6,994	4.1	492	492.0	493.0	1.0
D	19.53	835	7,817	3.7	505.5	505.5	505.7	0.3
E	20.66	650	5,585	5.1	515.7	515.7	516.2	0.5
F	21.40	650	5,528	5.2	525.3	525.3	526.2	0.9
G	22.36	650	7,509	3.8	536.4	536.4	537.3	0.9
H	23.81	1,100	10,316	2.8	547.4	547.4	548.2	0.8

[1]Miles above confluence with Alum Fork Saline River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,062	240	1,271	4.0	545.4	545.4	546.4	1.0

[1]Miles above confluence with Middle Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MILL CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,006	1,220	17,377	1.9	299.5	299.5	300.5	1.0
B	7,075	1,100	12,685	2.6	301.7	301.7	302.6	0.9

[1]Feet above confluence with Saline River and Alum Fork Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: NORTH FORK SALINE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	26,664	550/200[2]	3,613	1.6	311.9	311.9[3]	312.9	1.0
B	29,251	500	2,935	1.5	313.7	313.7	314.7	1.0
C	30,571	470	2,232	1.8	315.8	315.8	316.8	1.0
D	33,370	735	4,670	1.5	318.9	318.9	319.8	0.9
E	37,910	470	2,393	1.5	329.9	329.9	330.9	1.0

[1]Feet above Confluence of Fourche Creek

[2]Width/width within county limits

[3]Elevation with backwater effects from Fourche Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: OTTER CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	370	130	357	5.5	322.1	322.1	323.1	1.0
B	3,010	365	1,408	1.4	332.1	332.1	333.1	1.0

[1]Feet above Confluence of Otter Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: OTTER CREEK TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,220	440	2,242	3.0	323.6	323.6	324.6	1.0
B	4,960	370	2,302	3.1	329.6	329.6	329.6	0.0
C	8,130	380	2,113	3.4	339.1	339.1	340.1	1.0
D	10,890	290	1,108	6.5	352.9	352.9	353.0	0.1
E	14,190	230	741	6.3	367.4	367.4	367.5	0.1
F	15,880	230	1,083	4.1	380.6	380.6	381.5	0.9
G	20,000	255	1,163	3.4	405.2	405.2	406.2	1.0

[1]Feet above Pulaski County

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: OWEN CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	183.89	4000/3400[2]	48,451	2.2	251.8	251.8	252.6	0.8
B	189.90	10,000	79,519	1.3	264.2	264.2	265.1	0.9
C	195.00	6,050	50,406	2.1	274.6	274.6	275.6	1.0
D	195.95	5,380	21,505	4.9	282.7	282.7	283.2	0.5
E	196.58	4,200	59,399	1.8	284.6	284.6	285.1	0.5
F	197.24	3,270	25,393	4.1	286.1	286.1	286.8	0.7
G	197.92	1,210	21,061	5.0	287.8	287.8	288.5	0.7
H	198.97	2,100	33,630	3.1	292.4	292.4	293.1	0.7
I	200.51	3,215	30,746	3.4	295.9	295.9	296.8	0.9

[1]Miles above confluence with Ouachita River
[2]Total floodway width/ width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SALINE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,800	325	1,595	2.4	293.0	281.3[2]	282.3	1.0
B	3,225	325	1,490	3.2	293.2	282.9[2]	283.8	0.9
C	3,650	325	1,526	2.5	293.4	284.4[2]	285.2	0.8
D	4,050	400	1,773	2.1	293.7	285.9[2]	286.9	1.0
E	4,500	250	450	4.8	293.7	287.9[2]	287.9	0.0
F	4,925	225	1,097	4.4	293.7	292.7[2]	293.3	0.6
G	5,875	200	854	4.7	297.2	297.2	297.7	0.5
H	6,825	200	1,156	3.7	304.4	304.4	305.2	0.8
I	7,250	160	344	4.3	306.5	306.5	306.5	0.0
J	8,250	290	373	6.0	312.9	312.9	312.9	0.0
K	8,550	200	642	5.9	316.2	316.2	316.9	0.7
L	9,550	125	448	7.7	324.2	324.2	324.7	0.5
M	102,25	150	431	3.4	331.7	331.7	332.4	0.7
N	10,725	125	340	7.5	334.3	334.3	334.3	0.0
O	11,345	125	927	3.2	340.1	340.1	341.1	1.0
P	11,820	125	353	4.7	343.0	343.0	343.0	0.0
Q	12,440	150	370	4.5	349.6	349.6	350.0	0.4
R	13,440	150	548	5.0	360.0	360.0	360.6	0.6

[1]Feet above confluence with Saline River

[2]Elevation computed without consideration of backwater effects from Saline River

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	475	260	806	1.9	313.2	312.1[2]	313.1	1.0
B	2,320	75	331	4.7	320.0	320.0	320.9	0.9
C	3,854	114	278	7.5	329.7	329.7	330.3	0.6

[1]Feet above confluence with Otter Creek
[2]Elevation computed without consideration of backwater effects from Fourche Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SHANNON HILLS TRIBUTARY

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	50,104	86	665	4.2	279.9	279.9	280.8	0.9
B	51,430	195	877	3.2	282.8	282.8	283.7	0.9
C	51,955	114	758	3.6	285.7	285.7	285.9	0.2
D	52,735	142	638	4.2	287.2	287.2	287.9	0.7
E	53,696	148	746	3.6	289.5	289.5	290.5	1.0
F	54,954	247	1,090	2.5	294.0	294.0	295.0	1.0
G	55,599	138	627	4.3	296.4	296.4	297.4	1.0
H	56,470	196	1,153	2.3	300.4	300.4	301.0	0.6
I	57,120	54	336	7.0	300.4	300.4	301.3	0.9
J	57,794	218	846	2.8	303.5	303.5	304.1	0.6
K	59,644	205	632	3.7	307.0	307.0	307.9	0.9
L	60,722	378	991	2.4	310.2	310.2	311.1	0.9
M	61,585	313	782	3.0	312.9	312.9	313.8	0.9
N	62,383	293	921	2.5	315.9	315.9	316.7	0.8
O	63,354	215	588	4.0	318.8	318.8	319.8	1.0

[1]Feet above confluence with Saline River

[2]Width measured from left encroachment to right encroachment with small island considerations

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: TRACE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0.18	284	2,261	0.5	347.9	347.9	348.8	0.9
B	0.38	325	2,831	0.4	348.0	348.0	348.9	0.9

[1]Miles above confluence with Crooked Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: TRAILER PARK DITCH

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,850	400	1,369	1.8	337.9	337.9	338.9	1.0
B	2,140	400	1,100	2.2	338.6	338.6	339.2	0.6
C	5,330	500	924	2.4	355.9	355.9	355.9	0.0

[1]Feet above confluence with Willow Depot Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UPPER DEPOT CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,525	550	7,424	1.2	281.5	280.5[2]	281.4	0.9
B	2,475	650	6,777	1.3	281.5	280.6[2]	281.6	1.0
C	2,885	600	1,539	1.4	281.5	280.5[2]	280.9	0.4
D	3,525	600	3,954	2.1	281.5	281.0[2]	282.0	1.0
E	4,025	450	2,908	2.9	281.5	281.3[2]	282.2	0.9
F	4,525	200	1,107	4.8	281.5	281.3	282.1	0.8
G	5,025	200	914	5.2	283.9	283.9	284.4	0.5
H	6,025	200	836	4.9	287.9	287.9	288.4	0.5
I	6,550	250	1,760	3.0	290.4	290.4	291.4	1.0
J	7,075	250	1,588	3.2	291.8	291.8	292.5	0.7
K	8,025	300	1,118	5.5	294.6	294.6	295.0	0.4
L	8,615	300	915	5.3	298.0	298.0	298.2	0.2
M	8,975	400	2,119	3.0	300.6	300.6	301.4	0.8
N	9,597	600	2,883	2.1	302.2	302.2	303.1	0.9
O	10,537	400	1,921	4.0	304.1	304.1	305.1	1.0
P	10,885	400	1,262	4.0	305.2	305.2	305.3	0.1
Q	11,335	400	1,320	3.9	306.5	306.5	307.5	1.0
R	11,575	385	799	2.7	306.7	306.7	306.7	0.0
S	12,125	400	1,978	3.9	309.9	309.9	310.8	0.9
T	12,535	400	2,352	3.1	312.4	312.4	313.4	1.0
U	13,025	500	3,727	2.2	313.6	313.6	314.6	1.0
V	13,650	600	1,184	2.8	314.2	314.2	314.9	0.7

[1]Feet above confluence with Saline River

[2]Elevation computed without consideration of backwater effects from Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WILLOW DEPOT CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
W	14,200	600	2,990	3.2	316.1	316.1	317.1	1.0
X	14,740	400	1,573	3.8	317.9	317.9	318.4	0.5
Y	15,575	400	1,729	6.1	320.1	320.1	320.7	0.6
Z	15,775	400	1,482	3.2	321.8	321.8	322.6	0.8
AA	16,075	300	1,967	4.1	322.5	322.5	323.5	1.0
AB	16,525	300	1,220	6.1	324.0	324.0	324.4	0.4
AC	16,985	500	2,690	4.0	326.1	326.1	327.0	0.9
AD	17,360	350	2,241	4.4	327.2	327.2	328.2	1.0
AE	17,650	350	1,876	4.6	328.6	328.6	329.4	0.8
AF	17,925	350	2,271	3.6	329.8	329.8	330.7	0.9
AG	18,125	275	1,800	3.7	330.8	330.8	331.8	1.0
AH	18,300	78	461	2.7	331.2	331.2	331.2	0.0
AI	18,400	55	401	3.1	332.2	332.2	332.2	0.0
AJ	18,850	450	3,123	1.5	336.0	336.0	337.0	1.0
AK	19,250	450	2,842	1.8	336.3	336.3	337.3	1.0
AL	19,500	350	1,799	2.5	336.9	336.9	337.9	1.0
AM	20,250	200	658	4.4	339.8	339.8	340.3	0.5
AN	20,800	200	881	3.4	342.8	342.8	343.6	0.8
AO	21,050	200	843	4.0	343.9	343.9	344.7	0.8
AP	21,400	200	848	4.4	346.0	346.0	346.6	0.6
AQ	21,625	200	600	3.3	347.8	347.8	348.3	0.5
AR	22,075	200	906	4.2	349.8	349.8	350.6	0.8

[1]Feet above confluence with Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WILLOW DEPOT CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AS	22,265	300	1,709	3.0	350.8	350.8	351.8	1.0
AT	22,865	250	984	4.5	354.5	354.5	355.2	0.7
AU	23,365	250	1,014	5.2	357.2	357.2	358.0	0.8
AV	23,815	200	786	5.3	360.9	360.9	361.5	0.6
AW	24,040	200	390	6.1	362.9	362.9	363.0	0.1
AX	24,465	200	1,080	4.3	368.6	368.6	369.4	0.8
AY	24,715	100	435	5.4	371.1	371.1	371.6	0.5
AZ	24,865	58	293	4.2	377.3	377.3	377.3	0.0

[1]Feet above confluence with Saline River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SALINE COUNTY, ARKANSAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WILLOW DEPOT CREEK

Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table . The non-encroachment width indicates the measured distance left and right (looking downstream) from the mapped center of the stream to the non-encroachment boundary based on a surcharge of 1.0 foot or less.

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table , "Map Repositories").

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill". Visit the "Flood Map-Related Fees" section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed atwww.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Saline County FIRM are listed in Table . Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

Table 27: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
13-06-1581P	03-17-2014	Cedar Creek	05125CO150E

6.5.4 Physical Map Revisions

Physical Map Revisions (PMRs) are an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements,

annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Saline County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table , "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Saline County FIRMs in countywide format was 11/17/1982**.**

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Alexander, City of	04/18/1975	04/18/1975	NONE	01/20/1982	06/19/2012
Bauxite, Town of	06/19/2012	NONE	NONE	06/19/2012	NONE
Benton, City of	11/16/1973	11/16/1973	10/24/1975	12/15/1981	06/19/2012
Bryant, City of	06/27/1975	06/27/1975	NONE	06/28/1977	01/19/1996 08/19/1991 06/19/2012
Haskell, City of	06/27/1975	06/27/1975	06/28/1977	08/19/1987	06/19/2012
Saline County Unincorporated Areas	08/09/1977	08/09/1977	NONE	11/17/1982	04/02/2003 01/19/1996 06/19/2012
Shannon Hills, City of	05/17/1982	NONE	NONE	05/17/1982	08/15/1989 06/19/2012
Traskwood, City of	04/18/1975	04/18/1975	NONE	10/12/1982	06/19/2012

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Crooked Creek, Crooked Creek Tributary	07/20/1981	US Army Corps of Engineers (USACE)	Interagency Agreement No. H-9-79	September 1980	City of Alexander
McNeil Creek, Salt Creek, Upper Depot Creek, Willow Depot Creek	06/15/1981	Garver & Garver, Inc.	H-4746	March 1980	City of Benton
Owen Creek	01/19/1996	USACE-SWL	EMW-88-E-2768	September 1989	City of Bryant
Otter Creek, Shannon Hills Tributary	08/15/1989	USACE-SWL	H-9-79	July 1988	City of Shannon Hills
Bryant Tributary, and Trailer Park Ditch	05/17/1982	USACE-SWL	H-18-78	January 1981	Saline County Unincorporated Areas
Alum Fork saline River, Cedar Creek, Fourche Creek, Lorance and Dry Creeks,Middle Fork Saline River,Mill Creek, North Fork Saline River, Saline River, Clear Creek, Duck Creek, Hope Branch (Formerly identified as both Hopt Branch and Hopf Branch), Maple Creek,	1/19/1996	USACE-SWL	H-18-78	January 1996	Saline County Unincorporated Areas

Table 30: Summary of Contracted Studies Included in this FIS Report (Continued)

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Maple Creek Tributary, McCright Branch, and Owen Creek	04/02/2003	USACE-SWL	H-18-78	April 2000	Saline County Unincorporated Areas
All previously studied streams	06/16/2012	FTN/Taylor Joint Venture	EMT-2002-CO-0050	March 2009	Saline County and Incorporated area
Boswell Creek, Hurricane Creek, Hurricane Creek Tributary 1, Hurricane Tributary 1A, Little Hurricane Creek	TBD	Arkansas Natural Resources Commission	MAS 5	October 31, 2014	City of Benton, City of Bryant, Saline County
Trace Creek	TBD	Amec Foster Wheeler	EMW-2014-CA-00163	November 2015	City of Haskell, Saline County

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 31: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Alexander, City of	07/20/1981	02/13/1931	Final CCO Meeting	
		11/09/1978	Initial CCO Meeting	
Benton, City of	06/15/1981	08/14/1980	Final CCO Meeting	
		04/03/1978	Initial CCO Meeting	
Bryant, City of	01/19/1996	08/15/1990	Final CCO Meeting	
		07/28/1988	Initial CCO Meeting	
Haskell, City of	08/19/1987	*	Final CCO Meeting	
		*	Initial CCO Meeting	
Shannon Hills, City of	08/15/1989	06/30/1981	Final CCO Meeting	
		05/12/1978	Initial CCO Meeting	
Traskwood, City of	10/12/1982	*	Final CCO Meeting	
		*	Initial CCO Meeting	
Unincorporated Areas of Saline County	11/17/1982	02/15/1995	Final CCO Meeting	
		12/16/1981	Final CCO Meeting	
		05/10/1978	Initial CCO Meeting	

Table 30: Community Meetings(Continued)

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Saline County and Incorporated Areas	June 19, 2012	8/4/2009	Final CCO	FEMA, the communities, and the study contractor
		4/14/2008	Initial CCO	FEMA, the communities, and the study contractor
Saline County and Incorporated Areas	TBD	12/16/2015	Flood Study Review	TBD

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Saline County (FEMA 2012).

Table is a list of the locations where FIRMs for Saline County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 32: Map Repositories

Community	Address	City	State	Zip Code
Alexander, City of	Municipal Complex, 15605 Alexander Road	Alexander	AR	72002
Bauxite, Town of	Town Hall, 6055 Stanley Circle	Bauxite	AR	72011
Benton, City of	City Hall, 114 South East Street	Benton	AR	72015
Bryant, City of	Public Safety Building, 312 Roya Lane	Bryant	AR	72022
Haskell, City of	City Hall, 2520 Highway 229	Haskell	AR	72015
Saline County Unincorporated Areas	Saline County Courthouse, 215 North Main Street Suite 7	Benton	AR	72015
Shannon Hills, City of	City Hall, 10401 High Road East	Shannon Hills	AR	72103
Traskwood, City of	Community Center, 212 Main Street	Traskwood	AR	72167

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table .

Table contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain

management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 33: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region VI	Federal Emergency Management Agency, FRC 800 North Loop 288, Denton, TX 76209-3698 (940) 898-5399
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Michael Borengasser, CFM Arkansas Natural Resources Commission 101 E. Capitol Avenue, Suite 350 Little Rock, AR 72201 (501) 682-3969 michael.borengasser@arkansas.gov
State GIS Coordinator	Shelby Johnson Statewide GIS Coordinator 124 West Capitol Avenue, Suite 990 Little Rock, AR 72201 Phone: 501-682-2767 http://www.gis.arkansas.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 34: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
AGIO, 2015	Arkansas Geographic Information Office (AGIO)	Base Map data Aerial Photography	Arkansas Geographic Information Office (AGIO)	Little Rock, Arkansas	2015	http://gis.arkansas.gov
TIGER, 2015	United States Department of Commerce, Bureau of the Census	2015 TIGER GIS data	United States Census Bureau	Washington, D.C.	2015	www.census.gov
USGS, 1989	United States Geological Survey (USGS)	USGS 7.5-Minute Series Topographic Maps	United States Geological Survey (USGS)	Reston, VA	1989	www.usgs.gov
USGS, 2006	United States Geological Survey (USGS)	National Hydrography Dataset	United States Geological Survey (USGS)	Reston, VA	2006	http://nhd.usgs.gov
FEMA, 2012	Federal Emergency Management Agency (FEMA)	Flood Insurance Study, Saline County, Arkansas and Incorporated Areas	Federal Emergency Management Agency (FEMA)	Washington, D.C.	June 19, 2012	https://msc.fema.gov
FEMA, 2015	Federal Emergency Management Agency (FEMA)	National Flood Hazard Layer (NFHL)	Federal Emergency Management Agency (FEMA)	Washington, D.C.	December 2015	https://msc.fema.gov

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA, 2017	Federal Emergency Management Agency (FEMA)	Saline County PMR, 2016	Federal Emergency Management Agency (FEMA)	Washington, D.C.	2017	https://msc.fema.gov